Date: Sat, 25 Sep 93 04:30:21 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V93 #55
To: Ham-Homebrew

Ham-Homebrew Digest Sat, 25 Sep 93 Volume 93 : Issue 55

Today's Topics:

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

Date: Thu, 23 Sep 1993 20:41:48 GMT
From: dog.ee.lbl.gov!agate!howland.reston.ans.net!math.ohio-state.edu!sdd.hp.com!
col.hp.com!news.dtc.hp.com!hplextra!hpscit.sc.hp.com!icon.rose.hp.com!
lkraft@network.ucsd.edu
Subject: Anyone interested in discussing PLL synthesis?
To: ham-homebrew@ucsd.edu

Cliff Sharp (clifto@indep1.UUCP) wrote:
: >
: >   I've thought for a long time about synthesizing my old Sears-su rock-bound
: >unit, which has a VFO input. Sat down and did a little math, and the design
: >seems pretty straightforward; oscillators are in the 10-13 MHz range, etc.
: >The only problem I foresee is that tuning would require the VCO to change
: >frequencies at 833.3 Hz intervals, meaning to me that somewhere in the
: >chain, no matter how I design it, I'd end up using an 833.3 Hz frequency
: >standard.

: >   That's not hard to produce, even with extreme accuracy; we have a local
: >AM station at 1000 KHz that I could phase-lock to for a frequency standard
: >and then divide down. My question is, how effectively is this system going
: >to lock and hold a locked condition with such a low frequency as the
: >standard? Seems to me lock would be slow (not good when going from xmit
: >to rcv) and not necessarily very stable.
: >--

    Look at the schematics for the old Heathkit HW2036A two-meter
    transceiver. It used a reference frequency of 833.33 Hz (generated
    from a 10 MHz crystal), and it has 5 kHz steps at 144 MHz. VCO
    operated around 22 MHz, and they mix it with a crystal oscillator
    around 21 MHz to produce a difference signal that is applied to
    the programmable divider.

    One of the disadvantages of using a low reference frequency was that
    it was much harder to filter out noise caused by the reference chain.
    These transceivers had a trademark low-level "whine" caused by
    833.33 Hz ground noise. And you are correct, it does take more time
    for the system to achieve lock between receive and transmitter
    compared to radios that use, say, 10 KHz. Seems stable enough though.

    L

 ==
                              Lyle Kraft   AA6LK
 ########################   Hewlett-Packard
 ###### /_ _ ######   System Interconnect Lab -
 ##### / / /_/ #####   Information Networks Division
 ######   /   ######   Roseville, CA 95747
 ########################   916-785-5798
                              lkraft@core.rose.hp.com
 ==

Date: Thu, 23 Sep 1993 22:25:35 GMT
From: newsflash.concordia.ca!mizar.cc.umanitoba.ca!mona.muug.mb.ca!
bwalzer@uunet.uu.net
Subject: Cell phone parts for AmRadio?
To: ham-homebrew@ucsd.edu

In <nagleCDqo4H.1AC@netcom.com> nagle@netcom.com (John Nagle) writes:

>bwalzer@muug.mb.ca (Bruce Walzer) writes:
>>As I was thumbing through my Toko catalog the other day I came across a
>>section called SAW Filters. Apparently Toko makes SAW filters with center
[...]

>   Those are still somewhat exotic components, not something the
>typical cell phone of today has. Current technology seems to be
>ceramic filters and IF cans, like an ordinary FM radio, which, after
>all, is all a cell phone is. Don't know about Qualicomm's new
>spread spectrum units, though, which should have some nice parts for
>the spread-spectrum crowd.

[Thoughtful discussion of good parts for amateur radio from cell phones
 deleted. Thanks John.]

How do typical cell phones reject the reciever image? They have to receive
a band 20+ MHz wide. That would make the common 10.7 MHz IF freq not useful
so really cheap ceramic filters are out. A sort of cheap 21.4 MHz xtal
filter might work marginally. I've noticed from reading reviews of amateur
equipment that manufacturers seem to be using some really obscure IF
freqencies. Is everyone just getting their first IF filter cut to spec? What
is the "standard" IF freq for 440 and above?

Thanks again,

Bruce Walzer |Voice: (204) 783-4983
Winnipeg MB |Internet: bwalzer@mona.muug.mb.ca
Canada |AmRadio: VE4XOR

Date: Thu, 23 Sep 93 20:57:00 GMT
From: mercury.hsi.com!a3bee2.radnet.com!cyphyn!randy@uunet.uu.net
Subject: Crystals...FT 243's...no longer made?
To: ham-homebrew@ucsd.edu

kstuart@oasys.dt.navy.mil (Kenneth Stuart) writes:
:
: Just as a point of information, JAN Crystals in Fort Myers, Fla. had
: FT-243 crystals as a line item in their 1992 catalog. Price was
: $8.00 plus $0.50 shipping ($10.00 minimum order).
:
: For current info, their number is 1-800-JAN-XTAL.
:
: Ken Stuart, W3VVN

Thanks.....the thing is, 1st, W0lps's xtals were under $5.oo inc shipping
and I have an order pending....quite a few xtals.

Well...if worse goes to worse, I'll change over to using HC-33/u (the
large tin chicklet, o.75" jobs) and use less drive...(6CL6 osc)

I was making a 1 tube, #26 triode xmit...has to have hi-drive xtals.

--
Randy KA1UNW
randy@192.153.4.200

If you get a shock while
servicing your equipment,
DON'T JUMP!
You might break an expensive tube!

"Works for me!"
-Peter Keyes

Date: Fri, 24 Sep 1993 01:43:20 GMT
From: news.Hawaii.Edu!uhunix3.uhcc.Hawaii.Edu!jherman@ames.arpa
Subject: Project 8: 1 1/2 watts on 80M CW
To: ham-homebrew@ucsd.edu

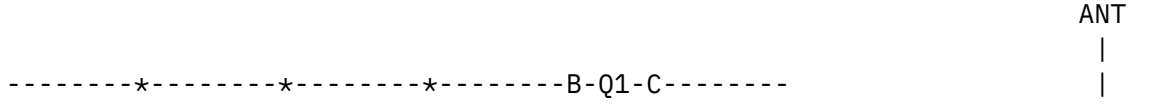
Can you all stand one more 80M xmtr? (Do you get the feeling that I'm trying to push for more 80M activity? I really love that band!) The book is 104 HAM RADIO PROJECTS FOR NOVICE AND TECHNECIAN by Burt Simon. Burt says:

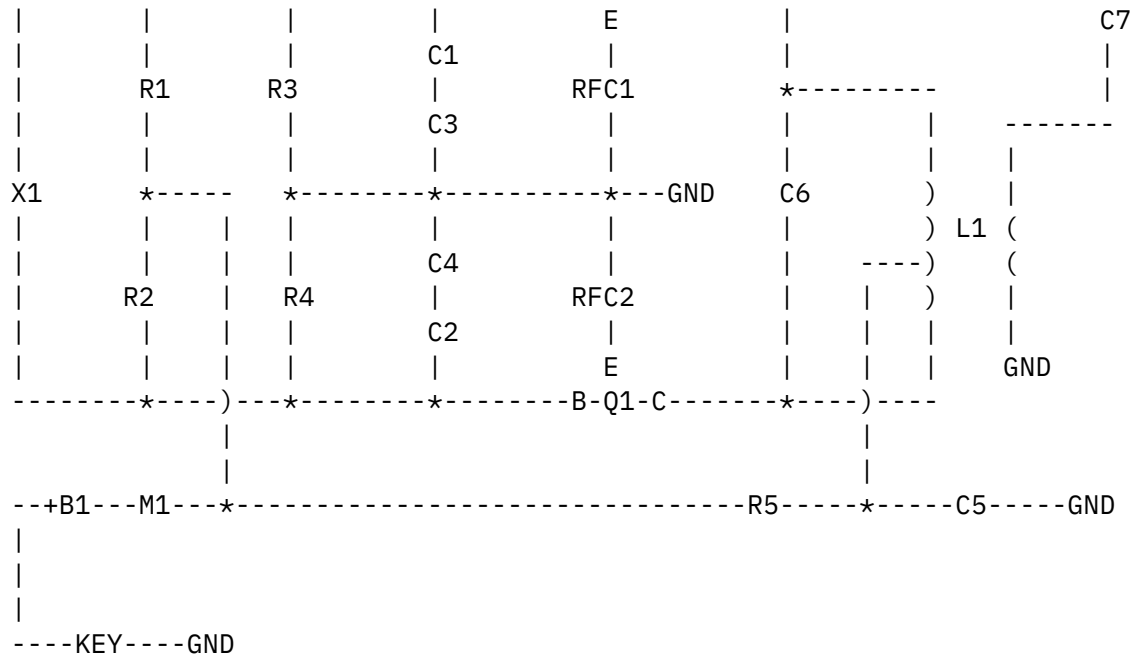
"This rig has provided many hours of fun for the authors in the 80M novice band, where regular 800 mile DX has been nothing out of the ordinary. In fact one contact was made with a W6 in Los Angeles from our Long Island,NY QTH.

"Tuning is conventional. Transistors should be loaded to about 50ma in the bottom of the dip if you're pumping in the full 30 volts. With C6 about half meshed, L1 should resonate at the low end of the 80M band. (You can check this with your GDO)."

Parts List

Q1, Q2	2N269 transistor
C1, C2	150 pF capacitor
C3, C4	300 pF
C5	.01 mF
C6	200 pF variable
C7	50 pF
R1, R2	470K resistor
R3, R4	2K
R5	200 ohms
B1	30 VDC battery
L1	30 turns, center-tapped, on 1 inch form, with 4 turn link into center for output
RFC1,2	2.5 mH RF choke (National R-100)
X1	80 meter fundamental crystal
M1	0-100 DC milliammeter





Note the polarity of B1; there are two `jumps': between R2 and R4, and
over the `hot' end of L1.

1 1/2 watts should be real fun - not quite the challenge as the 25 mw xmtr.

Okay, no more 80M xmtrs! I promised I'd post a 2M xmtr - I have two - neither
are FM, though. I'll post them next and let you folks figure out how to
FM them; shouldn't be hard at all. (Probably only the r.r.a.homebrew folks
will be interested in them, but you QRP mailgroup folks might have a use
for them also.)

Jeff NH6IL (ex: WA6QIJ)

Date: 23 Sep 93 13:52:56 EST
From: dale.ksc.nasa.gov!titan.ksc.nasa.gov!titan.ksc.nasa.gov!nntp@ames.arpa
Subject: RESPONSE to FT411e vox and Nasa-mics. etc..
To: ham-homebrew@ucsd.edu

In article <27r0gi$cp0@vixen.cso.uiuc.edu>, ahall@ux4.cso.uiuc.edu (Allen John
Hall) says:
>
>
>
>Hello everyone,
>

>   I finally got around to this, however I should probably be
>studying right now (but this'll be kept between you and I right?).
>Well, I basically asked three questions in the space of 1 week and
>I was able to come up w/ these answers thanks to many of you out
>there!
>
>******1) How do I make my ft411E vox work w/o buying the YH-2 headset?
>(I asked this because I ride and a headset doesn't fit too well under
>a helmet)
> (a)...unfortunately I don't know who gave this info to me, but here
> it is: You can use a radio shack electret mike-element (I used a
> 1kohm resistor in line w/ the center conductor of my jack (that'sa
> because they use some type of pre-amp in the one that I bought- it
> regulates the input voltage to the mic-element- don't ask me, I just
> did it and it works :) There are two different mic-elements for sale,
> I used the experiment (pc-board style) element (the one w/ only 2
> leads). and I was able to make something w/ this, but for that
> I'd like you to read on...
> (b)...I was reminded of the in the ear mics that work off of inner-
> ear noise (which would work well for my bike, but not for vox)
>
>******2)Info on the headsets that NASA uses in their control room??
> (a)...They are made by Plantronics- a good source for them is from
> an aviation mail-order shop in OH (suprise! they have another good
> use!):
>   Sporty's Pilot Shop
>   Clermont Co. Airport
>   Batavia, OH 45103-9747
>   or call 1-800-543-8633 and ask for their catalog (you might have
>   to specify communications- apparently they have a couple of
>   catalogs)
> I called them and recieved their catalog, a lot of interesting stuff,
> but didn't feature the headset I was looking for. I had also heard
> from a number of people that they are in the $200 range :(
> (b)...a source for telephone accessories:
>   "Hello Direct" (no given 800#, but you could ask the 800-info
>   number about them)
> (c)...Heil makes a nice headset but wouldn't work under a helmet
> (d)...use the inner-ear mic-ear peice
> (e)...there are bone-conducting mics (pricey and not yet easy to find)
> (f)...ask Steve Roberts N4RVE (but I think he's gone sailing)
> (g)...go to Japan- they sell all sorts of headsets :)
> (h)...the nice Plantronics one is the Telex Airman 750 headset
> approx. $200
>
>******3)Does anyone know of the group for bycicling hams??
> (a)...(please excuse the typo above!)
> Bicycling Mobile Hams of America

> send SASE to:
>   BMHA
>   Box 4009,
>   Boulder CO
>   80306
> for a sample of their newsletter and membership info. They
> hold a net on 14.253mHz 2230UTC on the 1st and 3rd Sunday of the
>
> month. Contact: Hartley Alley, NA0A on packet:NA0A@WA8ZIA.CO
>
>Well, that should do it for those three questions...
>As for what I did w/ my VOX on the FT411e (I haven't tried this under
>riding conditions yet- might be too windy)
>********I used the radio-shack element (thanks to the unknown ham) wired
>the way I said above and their earpiece to make a boom mike. For the
>boom, I used 12 gauge wire w/ very small wire going from the mike-element
>down the boom to the earpiece, all secured w/ heat shrink. Then bent the
>12 gauge around the back of the ear and then did some fidling w/ some stiff
>wire my mother used for making wreaths @ x-mas, to hold on the ear-piece.
>then kinda made things look nice and lead a 3 element wire from the boom
>stuff to the connectors for the rig. I used some left over computer multi-
>conductor wire (from DB-9 connectors) which was quite small and flexible.
>I rigged up the connectors for the rig w/ some wire and plastic-welder
>glue so that it would make a 2-jack type plug (similar to the Yaesu plugs)
>so that I would only have to fit one 2-jack plug into the rig. As far
>as the rest goes, I wired both the grounds for the mic and earpiece togehter
>on one conductor and the other go to the center-conductors on the jacks.
>As far as how good this thing looks and works is kinda up to you, if
>you spend some time @ it, you can make it pretty sturdy. However,
>someone pointed out that the Plantronics-style headset doesn't stay on
>too well. Oh, by the way you should find that you can use this
>home-made earpeice-boom-mic both on the ft411e vox and also w/ just the
>PTT button on the rig- (two headsets in one!- and my total was only
>$6.00 dollars -> $1.20 for the mic-element, $1.36 for the earpiece, some
>scrap wire hanging around the club and the rest for glue and stuff), so
>sounds a bit better than $200, but it might not look as nice, but I've
>been told that the response on the mic-element is louder, and maybe even
>better than my rig's mic- go figure!
>
>Well, good luck w/ it and this was all done thanks to these people:
>   Ted Cline
>   Frank
>   Paul Marsh
>   Ted Zateslo
>   Cantrell
>   Mark
>   Greg
>   Michael Dodson

>   Alan
>   Dave
>   and a few that I accidentally erased while I figured out
>   how to print out all this excellent info!
>
>Thanks again to everyone who replied!!! I can e-mail this thing
>to you if you want, but as far as intricate explanations goes,
>I'm kinda crunched for time- but wouldn't hurt to ask if you like.
>And as always, I enjoy hearing your input...
>
>73's et CUL!!!
>Allen   n9rzc
>
>email to: n9rzc@uiuc.edu
>
>
>
>
>
Allen,
There is an article in the QST Jan 93 issue which describes a VOX headset
for a KEnwood TS440 which costs about $5. My question to you is how did
you use the headset in a VOX mode? According to your message above you
wired the mic element basically directly to mic input along with ground to both
the audio and mic ground, does the FT411E have VOX mode built-in? I am
interested in doing the same for my mobile/HT (it's currently in use with a
momentary push button switch).

Please post your reply.
TNX
Tom

Date: 21 Sep 93 19:30:39
From: dog.ee.lbl.gov!agate!doc.ic.ac.uk!warwick!uknet!pipex!sunic!news.funet.fi!
funic!nntp.hut.fi!nntp!kwi@network.ucsd.edu
Subject: Source of SI/SD 8901 DMOS FETs
To: ham-homebrew@ucsd.edu

Does anyone know a source (which preferably accepts mail-orders from Europe)
of Siliconics SD/SI 8901 DMOS FETs in small quantities of course :)?
(See QST Feb 93...)

Kaj Wiik OH6EH/2
Kaj.Wiik@hut.fi

--

Helsinki University of Technology, | kwi@vipu.hut.fi
|
Metsahovi Radio Research Station | !EID RO EVOM
|
Metsahovintie, 02540 Kylmala, Finland | oh6eh@oh2rba.fin.eu
|

Date: 23 Sep 93 16:56:35 GMT
From: dog.ee.lbl.gov!agate!howland.reston.ans.net!darwin.sura.net!opusc!usceast!phil@network.ucsd.edu
Subject: transverter
To: ham-homebrew@ucsd.edu

I just finished building the Down East Microwave 70cm -> 10 mtr
LO and RX brds (haven't finished the TX brd yet). Any recommendations
about a good preamp to use with it? I'm going to use it
for the PACSAT downlink.

-phil AD4FH

Date: 23 Sep 93 17:50:54 CDT
From: timbuk.cray.com!hemlock.cray.com!andyw@uunet.uu.net
Subject: transverter
To: ham-homebrew@ucsd.edu

In article <phil.748803395@bigcheese>, phil@math.scarolina.edu (Phil Moore) writes:
> I just finished building the Down East Microwave 70cm -> 10 mtr
> LO and RX brds (haven't finished the TX brd yet). Any recommendations
> about a good preamp to use with it? I'm going to use it
> for the PACSAT downlink.
>
>
> -phil AD4FH

Date: (null)
From: (null)
But, hey, I've been wrong before..
--
andyw N0REN/G1XRL

andyw@aspen.cray.com Andy Warner, Cray Research, Inc. (612) 683-5835

Date: Fri, 24 Sep 1993 05:21:12 GMT
From: pacbell.com!uop!csus.edu!netcom.com!nagle@ames.arpa
To: ham-homebrew@ucsd.edu

References <1993Sep21.225023.8397@muug.mb.ca>, <nagleCDqo4H.1AC@netcom.com>,
<1993Sep23.222535.14535@muug.mb.ca>
Subject : Re: Cell phone parts for AmRadio?

bwalzer@muug.mb.ca (Bruce Walzer) writes:
>How do typical cell phones reject the reciever image? They have to receive
>a band 20+ MHz wide. That would make the common 10.7 MHz IF freq not useful
>so really cheap ceramic filters are out.

They have to tune across a band 20MHz or so wide, but the IF bandwidth is only 30KHz.

The Signetics app note suggests a 45MHz first IF and a 455KHz second IF, front-ended by a duplexer, a preamp, a broadband filter, and a first mixer. The frequency synthesizer feeds the first mixer. So nothing beyond the first mixer needs a bandpass exceeding 30KHz.

There's a suggestion that a 80-90MHz first IF with SAW filters could be better, but Signetics claims that a NE605 with ceramic filters is good enough to meet the specs for cell phones. I don't know much about SAW filters, though.

If you're really interested in using these parts, get the Signetics RF data book. It's full of good application notes, which you need; building tiny-scale RF gear with huge gains requires very careful layout, and they've already done the necessary experimental work.

John Nagle

Date: Thu, 23 Sep 1993 13:48:46 GMT
From: pacbell.com!att-out!att!news.bu.edu!olivea!spool.mu.edu!
howland.reston.ans.net!usenet.ins.cwru.edu!ncoast!nshore!seastar!
jjw@network.ucsd.edu
To: ham-homebrew@ucsd.edu

References <27cilr$mkc@newscast.West.Sun.COM>, <27o5mt$388@usenet.INS.CWRU.Edu>,
<2489@indep1.UUCP>n.ans.ne

Reply-To : jjw@seastar.org (John Welch)
Subject : Re: Anyone interested in discussing PLL synthesis?

In light of something mentioned earlier, it seems I may need to re-think an idea I've had about using a DDS to control a PLL. What I had intended was to have the DDS cover, say, 4.5 to 7.5 MHz, and use a divide-by-10 in the loop to make the VFO cover from 45 to 75MHz in still less than 1Hz steps.

However, as mentioned in another posting, every time the phase detector sees a difference in phase it will send out a 1 or 0, resulting in phase noise from FMing. I had hoped that, by using such a high reference frequency I could have a very low phase noise PLL.

I had planned to use the venerable old 4044 for a phase detector (I found a *bunch* of them at a hamfest for $0.50 ea :-) with a commercial VCO, possibly two or three VCOs (if I include 6 meters and 2 meters).

I have done a similar thing in the past, slaving a 4024 VCO to a 4044 detector using a homebuild DDS board. I didn't really understand from the books how to do it with a variable reference frequency, so I picked someplace near the middle of my range and tried it. It worked, in that the output was 100x the reference and it would lock up fairly fast, but I had no way to measure the signal's width at the time and have since dismantled most of it.

Any help would be appreciated. -->jjw n9jzw

--
John Welch, N9JZW

End of Ham-Homebrew Digest V93 #55
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